

# SYSTEM AND METHOD FOR PREDICTING CACHE PERFORMANCE

## ABSTRACT

5 A system and methods for simulating the performance (e.g., miss rate) of one or  
more caches. A cache simulator comprises a segmented list of buffers, with each  
buffer configured to store a data identifier and an identifier of the buffer's  
segment. Data references, which may be copied from an operational cache, are  
applied to the list to conduct the simulation. Initial estimates of each cache's miss  
10 rate include the number of references that missed all segments of the list plus the  
hits in all segments not part of the cache. A correction factor is generated from  
the ratio of actual misses incurred by the operational cache to the estimated misses  
for a simulated cache of the same size as the operational cache. Final predictions  
are generated by multiplying the initial estimates by the correction factor. The  
15 size of the operational cache may be dynamically adjusted based on the final  
predictions.